



28 May 2021

Jim Betts
Secretary
Department of Planning, Industry and Environment
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PARRAMATTA NSW 2124

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Boral Limited
ABN 13 008 421 761

Dear Mr Betts

RE: DUNMORE LAKES MODIFICATION 2 – DA 195-8-2004-MOD 2 –
ENDORSEMENT OF CONSULTANT

Dunmore Sand & Soil Pty Limited (DSS) was granted approval for DA 195-8-2004-MOD 2 in November 2020. This letter seeks your endorsement of Environmental Earth Sciences (EES) to prepare the Acid Sulfate Soils Management Plan for the Stage 5 operations.

In accordance with Schedule 3 Condition 33a), DSS seeks to engage EES to prepare the above management plan. Mark Stuckey is the lead consultant acting for EES, and has extensive experience as a soil scientist, hydrologist and contamination expert. Mark's CV is attached for your information.

Should you have any further questions relating to the information provided in this letter, please do not hesitate to contact me on 0418 748070.

Yours faithfully

Kate Jackson
Regional Manager – NSW/ACT
Boral Land & Property Group

Mark Stuckey

Senior Principal Soil Scientist, Hydrogeologist and Risk Assessor

Qualifications

- Masters of Science (Groundwater Hydrology) – Flinders University of SA (2006)
 - Bachelor of Science in Agriculture (Soil Science Hons) – University of Sydney (1994)
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Appointments/ Memberships

- Certified Professional Soil Scientist (CPSS) Contaminated Site Assessment & Management (CSAM) Accredited – Soil Science Australia (2018-2021)
 - Contaminated Land Auditor in Queensland, pursuant to the *Environmental Protection Act 1994* (2015-2021)
 - Environmental Auditor – Contaminated Land in Victoria, pursuant to the *Environment Protection Act 1970* (2016-2021)
 - Site Auditor in NSW accredited under *Contaminated Land Management Act 1997* (2016-2021)
 - Environmental Management Systems (EMS) Auditor (2015-2021)
 - Suitably Qualified Person (SQP) in Queensland in accordance with the Environmental Protection Act 1994, with “acceptable qualifications and experience to perform work for complex sites including gasworks.”
 - Member International Association of Hydrogeologists (MIAH) (2006-2021)
 - Member Soil Science Australia (SSA), Certified Professional Soil Scientist (CPSS) (1997-2021)
 - Member Association of Environmental Health and Sciences (AEHS) (2008-2021)
 - Member Australasian College of Toxicology and Risk Assessment (ACTRA) (2021)
 - Australian Contaminated Land Consultants Association (ACLCA) Queensland Branch – Auditor Sub-Committee Member (2016-2021), Chair 2018-2021
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Technical Training

- 1st Water in Coal Mines School – International Centre for Excellence in Water Resources Management (ICE WaRM), Brisbane, September 2011
- Ecological Risk Assessment for a Sustainable Environment – online class taught by Dr David Ludwig, University of Massachusetts Boston and the Association for Environmental Health and Sciences (AEHS), September 13 to December 10, 2010
- National Short Course in Environmental Health: Principles of Risk Assessment & Management. South Australian Centre for Public Health (2009)
- 9th Groundwater Modelling School: Numerical, Analytical, Solute Transport (2008)
- 4th Aquifer Storage & Recovery National Workshop: management of aquifer recharge (2004)
- 16th & 26th Australian Groundwater Schools (Fundamentals of Groundwater Science, Technology & Management) (1997 & 2004)
- Investigations for Contaminant Geoscience & Introduction to Site Remediation (2004)
- 1st Soil & Groundwater Pollution (Investigation, Remediation & Risk Assessment) Course (2003)

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Skills

Mark has extensive experience with and has been involved in:

- Hydro-geochemistry and investigation of groundwater resources;
 - Soil methodology, characterisation and chemistry;
 - Waste rock geochemistry;
 - Groundwater/ soil interaction;
 - Acid sulfate soil assessment and management; and
 - Human health/ ecological risk assessment & groundwater solute transport assessment.
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Project Summaries

Environmental Audits (53 completed, 35 on-going)

- Toowoomba Regional Council: From 2016 – 2017: Removal of site from Environmental Management Register (EMR) following fuel storage remediation/ validation, Toowoomba, QLD
- Croxton Logistics: From 2016 – 2017: certificate of environmental audit (CoEA) for a residential development in Glen Waverly, VIC
- Department of Defence: From 2017 – current: Site Auditor (SA) for on- and off-site investigation and on-site remediation of per- and poly-fluorinated substances (PFAS) at RAAF Base Richmond, NSW

Completed:

Projects in Queensland (32): Bundi (via Roma), Jimboomba, Sherwood, Yeronga, Milman (via Rockhampton), Proserpine, Toowoomba, Eden's Landing, Fortitude Valley, Bundamba, Brisbane, Algester – certification of removal of land from the Environmental Management Register (EMR); Emerald and Toowoomba – certification that land is suitable for unrestricted use; Pinkenba – certification that land is suitable for restricted uses; Suncorp Stadium, Milton – certification of amendment to Site Management Plan (SMP); Murrumba Downs, Coorparoo (x2) and Coochin Creek – certification of compliance with Notices, operating service station, former drycleaners and burning of CCA treated timber; Bruce Highway Upgrade Project – audit of PFAS investigation/ remediation strategies; Gladstone – certification of investigation and remediation of caustic spill (x3); Ayr, Home Hill, Proserpine, Gladstone, Airlie Beach and Toowoomba – certification of fire station PFAS investigations; Banyo – third party review of audit; Department of Defence PFAS at Wide Bay Training Area

Projects in Victoria (7+4): Elsternwick, Port Melbourne and Thomastown – statement of environmental audit (SoEA), high density residential development with auditor determined CUTEP; Glen Waverly – certificate of environmental audit (CoEA), residential development; Port Melbourne – SoEA, mixed use (including multilevel childcare) development; Coburg – SoEA and CUTEP, medium density residential development; Fitzroy – SoEA and CUTEP, hotel development; Footscray and Maribyrnong – Auditor verification of Statement Conditions; Yarraville – Auditor verification of Clean Up Plan, DSI and SAQP; Myrtleford – Auditor verification of landfill rehabilitation and monitoring plans

Projects in NSW (8): Tweed Heads West (x2) – Section A1 and B Site Audit Statements (SAS), commercial and residential developments; South Hurstville – Section A2 SAS school development; Kembla Grange – Section A1 SAS commercial development; Richmond RAAF Base PFAS – non-statutory Section B SAS; Sydney Park – non-statutory Section A2 SAS open space development on landfill; Camden – interim advice for milk factory development; Surry Hills – interim advice for residential development

Projects in Northern Territory (2): Darwin State Square car-park development, Darwin Rapid Creek stormwater mitigation development

On-going:

Projects in NSW (5): Byron Bay development on mineral sands, Woonona residential development, Tweed Heads West – Section A1 SAS residential development, Wagga Wagga hospital development, Richmond RAAF Base PFAS remediation

Projects in Victoria (5): Cheltenham commercial development, Bendigo compliance with Statement conditions, Altona North compliance with CUN, Alpine Shire landfill audits (x2)

Projects in Queensland (21): Redcliffe rugby league club landfill; Proserpine quarry; service stations at Dayboro, Miami, Rockhampton (x2) and Mango Hill; Alderley residential development; fuel depot PFAS at Kingaroy and Mareeba; Salisbury printers; Cross River Rail (12 sites); Southport marina redevelopment; Holland Park; Elanora; Scarborough; North Lakes; Bowen; Richlands; Biloela; Golden Beach

Projects in Northern Territory (4): Darwin waterfront hotel development, Larrakeyah open space development, Ludmilla commercial development, Charles Darwin University child-care development

Expert Witness (18 completed, 3 on-going)

- Level Crossing Removal Authority (LXRA): From April – June 2018: Independent Peer Review (IPR) and Panel Appearance for Contaminated Land and Coastal Acid Sulfate Soils (CASS) for the Edithvale and Bonbeach Level Crossing Removal Projects, Melbourne, VIC
- EPA Victoria: From 2015 – 2016: Independent desktop review for the continuation of mineral by-products disposal at Iluka's Douglas Mine Site, Northwest VIC

Projects in NSW (5): Wagga Wagga (soil science and hydrogeological advice, proposed piggery), Hill Top (advice relating to contamination issues at a shooting range), Byron Bay (groundwater supply advice relating to freeway expansion), Nelson Bay (expert report and evidence on aquifer storm-water injection system), Barangaroo (expert opinion review team on Hickson Road gasworks contamination)

Projects in Victoria (8+1): Bulla/ Barwon Heads/ Yaringa/ LXRA Edithvale and Bonbeach (acid sulfate soil statement of evidence), Dutson Downs (statement of evidence for VCAT appeal, Soil Organic Recycling Facility), Douglas (independent technical review of in-pit mineral by-products disposal), Skipton (expert report and evidence, Planning Panels Victoria, groundwater/ spring impact), Melbourne Airport JUHI PFAS

Projects in Queensland (5+2): Carrara (expert witness on acid sulfate soil for regulator, golf course development), Chinchilla (peer review of investigation into leakage from underground coal gasification), Herberton (independent technical review on acid leakage from tin mine), Frankfield/ Clermont (expert witness on health and ecological impacts of arsenic in quarry product), Paper mill investigation and remediation review, Brisbane airport PFAS (x2)

Per- & poly-fluoroalkyl substance (PFAS) Projects (19 completed, 9 on-going)

- Lendlease and CPB: From 2015 – 2020: Principal Technical Advisor to Principal Contractors for NACC/ WLMR2 developments, RAAF Base Williamtown, NSW and RAAF Base Tindal, NT
- RAAF Richmond, NSW (Site Auditor/Technical Advisor, 2017-current)
- Department of Defence WBTA QLD (Site Auditor/Technical Advisor 2018-2021)
- Jervis Bay Airfield, NSW (JBAF) (Technical Principal, 2016-2017)
- HMAS Albatross Nowra, NSW (AFFF spill response and management/ assessment, 2016)
- Gold Coast Airport, QLD (Soil and Groundwater Trigger Assessment, ILS & PLIFT Projects, 2015-2016 and PLIFT STA Project 2019-2020)
- Bruce Highway Upgrade Project, Caloundra-Sunshine Motorway, QLD (Contaminated Land Auditor [CLA], 2017-2018)
- Sydney Airport East/ Airport North tunnelling projects, NSW (Dewatering Feasibility Assessment and Management Plans including PFAS management, for John Holland Group), 2017-2019



- AACO Oakey (QLD), RAAF Edinburgh (SA), RAAF Tindal (NT) and RAAF Williamtown (NSW) Conceptual Hydrogeological Models for proposed water treatment plants (2018)
- Kingaroy and Mareeba fuel depot decommissioning investigations, QLD (CLA, 2018-current)
- Independent review of environmental reports, provision of advice, Bulimba Barracks, QLD (2019)
- Independent review of environmental reports, provision of advice, Yarrabilba and Bowen Hills, QLD (2020-current)
- Queensland Fire & Emergency Services (QFES), 7 sites in QLD (CLA, 2019-2020)
- PFAS Management Strategy for the Northern Road Upgrade, Glenmore Park, NSW (2019)
- Human health and ecological risk assessment (HERA) for future residential development adjacent to former incinerator, Werribee, VIC (2019)
- HERA for former industrial site divestment, Runcorn, QLD (2019-2021)
- HERA for landfill, Redlands, QLD (2020-2021)
- Expert opinion for PFAS –Brisbane paper mill (2019-2020)
- Expert witness for PFAS – Melbourne and Brisbane (x2) airports (2019-current)
- Richlands fire investigation, QLD (CLA, 2020-current)

Soil, Soil Vapour and Groundwater Contamination Studies (>100 sites)

- Vaughn Constructions: From 2018 – 2019: soil, soil vapour and groundwater assessment of former gasworks, Whitehall Street, Footscray, VIC

Projects in NSW/ ACT: Williamtown (PFAS at RAAF Base Williamtown), Gore Hill (ABC television site), Granville (battery manufacturing facility), Coffs Harbour (fuel spill at airport), Botany Basin (numerous studies), Revesby (bitumen manufacturing plant), Kingsgrove (former gasholder), Cherrybrook (uncontrolled fill site), Sydney Harbour Bridge (lead studies of Bradfield and Dawes Point parks), Bathurst/ Glenn Innes/ Tenterfield/ Dungog/ Grafton (timber treatment plants), Pennant Hills/ Lindfield/ Blacktown/ Randwick/ Coonamble/ Lyons ACT (service stations), Fyshwick (soil and groundwater assessment of a former dry cleaning facility), Catherine Hill Bay (soil and groundwater assessment of a former colliery)

Projects in Victoria: Dutson Downs (waste-disposal site), Yarraville (sugar refinery and distillery), Gippsland (Regional Outfall Sewer), Clayton, Lakes Entrance (abandoned oil exploration well site), Flemington/ Craigieburn/ Deer Park/ Caroline Springs/ Langwarrin/ Leopold/ Tarneit/ East Melbourne/ South Yarra/ Armadale/ South Melbourne/ Albert Park (children's services sites), Bayswater, South Kingsville (PCE, TCE, DCE, manufacturing plants)

Projects in Queensland: Gold Coast Airport (PFAS at ILS and PLIFT projects), Cairns/ Mackay Airports, Rockhampton/ Takura/ Wacol (timber treatment plants), Maryborough (foundry), Sunnybank Hills, Hervey Bay/ Maryborough/ Rockhampton/ Townsville/ Gin Gin/ Brendale (electricity substations), Toowoomba, Toowong, Arundel, Townsville Port, Raceview, Bulimba, Fortitude Valley, Hamilton (asbestos in soil)

Projects in Western Australia: Perth (former galvanizing plant)

Projects in Northern Territory: Tindal (PFAS at RAAF Base for NACC development), Yuendumu (roadside cyanide spill), Darwin (Francis Bay detailed assessment)

Projects in New Zealand: Onehunga (metal recycling facility), Otahuhu (hydrogeological review of Nufarm former fertilizer manufacturing and NZL Group Limited sites), Waitakere (groundwater monitoring of Kay Road Balefill)

Groundwater Contamination and Remediation Studies (>20 sites)

- Bunnings: From 2002 – current: investigation, remediation and on-going management/ treatment of contaminated groundwater (chlorinated solvents and hydrocarbons), Maidstone, VIC

Projects in NSW: Coffs Harbour (groundwater and soil vapour assessment of a benzene plume, and implementation of an enhanced biodegradation program), Arncliffe (groundwater study of a TCE spill at a former asphalt batching plant), Alexandria (hydrogeological assessment, arsenic plume, Botany Sands on Shea's Ck)

Projects in Victoria: Moe, Morwell (groundwater assessment of Waste Water Treatment Plants), McCrae (nutrient injection, characterization/ modelling of nitrogen plume in unconfined aquifer, followed by phyto-remediation study), West Footscray (groundwater contamination study, LNAPL and DNAPL impacted site on fractured basalt with an in-filled quarry), Moorabbin (groundwater assessment to validate solvent release remediation, including nutrient injection into an aquifer and subsequent monitoring), Hughesdale (hydrogeological investigation and risk assessment, service station), Springvale (hydrogeological assessment of a TCE plume on the Brighton Group aquifer), Ballan (solute transport and vapour intrusion assessment of hydrocarbon spill and plume)

Projects in Queensland: Kingaroy (hydrogeological assessment and remediation of a TPH plume, former service station and waste disposal well), Archerfield (study on fate & transport of a solvent plume, asphalt batching plant)

Human Health and Ecological Risk Assessments (>40 sites)

- Lendlease: From 2015 – 2020: Work-Health & Safety (WHS) Human Health Risk Assessments (HHRA) for site workers at NACC Williamtown and Tindal RAAF Bases, and Gold Coast Airport Southern Terminal Expansion (GCA STE) projects, NSW, NT and QLD
- Property NSW: From 2017 – 2018: ecological risk assessment for total recoverable and polycyclic aromatic hydrocarbons (TRH/ PAH) in soil, Macquarie Park, NSW
- City of Moonee Valley: August – November 2018: health and ecological risk assessment (HERA) and management plan for soil at Debneys Park, Racecourse Road, Flemington, VIC
- McCreadie Pty Ltd: From 2013 – 2018: HERA for arsenic in soil at a proposed residential development on a former mine site, including environmental audit, Diamond Creek, VIC

Projects in NSW: Bundarra (metals risk-based assessment, Gwydir River bridge surrounds), Coramba (risk evaluation of petroleum impacts on drinking water supply), Camellia (risk assessment of carbon tetrachloride/ chloroform/ CrVI impacted site, including vapour risk assessment), Randwick (risk-based assessment of soil, soil-vapour, groundwater and air quality on four adjacent properties), Wagga Wagga (risk-based soil vapour assessment, Tarcutta Street gasworks), Cootamundra (health and ecological risk assessment of gasworks remediated soil), Molong (health and ecological risk assessment of former gasworks site), Williamtown (occupational exposure risk assessment for PFAS at NACC and WLMR2 development sites), South Lismore (arsenic remediation of chemical residue)

Projects in Victoria: Ballarat (arsenic impacted former mine tailings site), Docklands (West Melbourne gasworks), South Yarra (risk-based assessments (2) of soil VOC vapour levels for developments underlain by an unidentified LNAPL plume), Springvale (risk-based assessment of PCB and Dioxin impacted site), Armadale/ South Melbourne/ Albert Park/ South Yarra/ East Melbourne (risk-based assessment of soil at children's services centres), Brunswick East (risk-based assessment of soil and groundwater VOC vapour levels, and soil lead and PAH concentrations, for a residential development), Braybrook (risk-based assessment for soil vapour migration to off-site receptors), North Melbourne (risk assessment for soil vapour migration, former gas-holder), West Melbourne (risk assessment for on-site re-use, Dynon Port rail link project), East Malvern (human health and ecological risk-based assessment for former in-filled quarry), Newport (medium- to high-density residential development on a former timber yard/ in-filled quarry), Maribyrnong (preliminary and detailed risk-based assessment, former Defence facility), Bendigo (risk assessment for arsenic in soil on a residential development), Northcote (railway corridor), Deer Park (arsenic in rail corridor), Castlemaine (ecological risk-based assessment, former rifle range and foundry waste dumping ground), Maidstone (risk-based assessment of TCE/ DCM/ TCFM plume migration via groundwater to off-site receptors), Ballan (QRA for petroleum plume), Werribee (PFAS for residential development), Springvale (vapour risk assessment for TCE in groundwater beneath commercial building), Werribee (PFAS HERA for residential development adjacent to incinerator)

Projects in Queensland: Takura (health and ecological risk-based assessment, and remediation criteria development, timber treatment plant), Bardon (former service station), Townsville

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(environmental risk-based assessment of groundwater impacts on Stuart Creek from copper refinery discharge), Yurbi (environmental evaluation and risk based assessments for soil, surface water and groundwater, concentrate ore rail loading facility), McKinlay (health and ecological risk-based assessment, mine site roadside soil), Runcorn (PFAS HERA for industrial site divestment), Redlands (PFAS HERA for landfill)

Projects in South Australia: Seaford (HERA & remedial methodology, former shooting range)

Projects in Northern Territory: Tindal (WHS exposure risk assessment for PFAS at NACC)

Projects in Tasmania: Bell Bay (risk assessment manganese smelter fume and mud)

International: Hastings, NZ (risk-based assessment on arsenic levels in soil), Altos de Copaquilla, Chile (human health risk assessment of mine spoil and heap leach piles)

Hydrogeology (>30 sites completed and on-going)

- **HydroChem:** From 2013 – 2015: hydrogeological review of Groundwater Monitoring Programs (GMPs) for nine Department of Defence facilities in Southern Victoria (Laverton, Fishermans Bend, Cerberus, Point Cook, East Sale, Puckapunyal, Mangalore, Monegeetta, Simpsons Barracks), including: a beneficial use assessment, receptor pathway evaluation and establishment of appropriate water quality criteria; surveying bores at East Sale; sampling at Cerberus; and associated GIS mapping and CSR rating
- **Dunmore Sand and Soil:** From 2018 – 2020: Groundwater Impact Assessment Report for proposed sand dredging operation – Stage 5 Dunmore, NSW
- **Boral:** From 2017 – 2020: Groundwater Impact Assessment Report for proposed sand dredging operation – Stockton, NSW

Projects in NSW: Coffs Harbour (24-hour constant discharge and recovery test to design remedial program based on aquifer parameters), Mangrove Mountain (3-day constant discharge/recovery test, aquifer evaluation for increased resource allocation), Kandos (Packer Testing of karst system at a limestone quarry and surrounds), Nelson Bay (detailed study for a storm-water re-injection feasibility project), Revesby (slug and constant discharge tests), Camellia (review of extraction system and dewatering trial for bulk excavation works to 12 m depth), Molong (Packer and Constant Discharge Testing of karst aquifer system, former gasworks), Ewingsdale (hydrogeological assessment for freeway expansion impacts), Canbelego (dewatering and water supply predictions using an analytical model), Cobar (water supply for a silver mine, including exploration and 7-day constant discharge and recovery tests), Cobar (review of groundwater, surface water, sediment and soil data, Endeavor Mine), Toongi (hydrogeological assessment for proposed Dubbo zirconia project), Hermitdale and Girilambone (conceptual site hydrogeological model for Tritton copper mines), Botany (Airport East, North and Sydney Gateway Dewatering Feasibility Assessments)

Projects in Victoria: Colac (24-hour constant discharge and recovery test to assess remedial options for dissolved gasworks NAPL plume in a wedge-shaped aquifer bound by a marl aquitard), Horsham (22½-hour constant discharge and recovery test to assess remedial options for dissolved plume migration from a former gas-works site), Stawell (44 individual slug-tests in a fractured rock aquifer to determine heterogeneity as a function of dissolved chemical migration from a former gas-works), Dutson Downs (installation of 20 and assessment of 50 groundwater monitoring bores to determine potential impacts of waste disposal on regional aquifer systems), South Yarra (6-hour constant discharge, step draw-down and recovery test to model dewatering requirements for basement car-park in Brighton Group aquifer), Maidstone (8-hour constant discharge test in the Newer Volcanics Basalt to determine remedial requirements for dissolved chemicals and NAPL)

Projects in Queensland: Townsville (24-hour constant discharge & recovery test to assess potential impacts of a groundwater plume at a metal refinery), Bli Bli (review of groundwater flow model for water usage at a proposed golf course), West End (dewatering management plan for basement)

Projects in Northern Territory: Nolan's Bore via Aileron (installation of abstraction and observation wells, followed by a 4-step drawdown test, 7-day constant discharge test & 7-day recovery test to assess in pit dewatering requirements for future open cut mine), Central Tanami (hydrogeological assessment for proposed gold mine expansion)

Hydro-geochemistry and solute transport assessment (>50 sites)

- Istation Developments: From 2017 – 2019: aquifer physical characterisation and solute transport assessment of aged hydrocarbon plume in Newer Volcanics basalt aquifer for a Cleaned Up To the Extent Practicable (CUTEP) assessment, Thomastown, VIC
- Xstrata Copper: From 2003 – 2011: development of a conceptual site and solute transport model for dissolved metal impacts from an acid sulfur plume at the Townsville Port Facility, QLD

Projects in NSW: Coffs Harbour (service station, enhanced biodegradation), Kandos (groundwater monitoring at a limestone quarry and surrounds), Arncliffe (asphalt batching plant TCE plume), Revesby (bitumen manufacturing plant), Camellia (carbon tetrachloride/ chloroform spill), Molong/ Cootamundra/ Katoomba/ Bathurst/ Lithgow/ Tarcutta Street Wagga Wagga/ Yass/ Grenfell (gasworks), Wollongong/ Byron Bay/ Narrung Street, Wagga Wagga (wastewater treatment plants), Canbelego (installation and monitoring of a groundwater network for a gold mine), Alexandria (arsenic and TPH plumes in Botany Sands on Shea's Creek), Dapto (metals migration from a slag heap), Berrima (underground coal mine closure and seepage)

Projects in Victoria: Colac/ Horsham/ Stawell/ Castlemaine/ Ararat/ North Melbourne (gasworks remediation), Moe/ Morwell/ Seaspray/ Dandenong/ Werribee (wastewater treatment plants), McCrae (service station, nutrient injection, phytoremediation), West Footscray (LNAPL/ DNAPL), Moorabbin/ Springvale/ Sunshine West/ Braybrook/ Maidstone (solvents/ TCE), Hughesdale/ Flemington/ Clayton/ Ballan (service stations), Morwell (coal mine overburden dump monitoring and GQMP), Mentone (BTX, phthalates, GQMP), Dutson Downs (waste disposal site), Maffra (dry cleaners – PCE/ TCE/ DCE/ VC), Prahran (service station with CUTEP/ GQMP), Southern Victoria Defence facilities

Projects in Queensland: Kingaroy (service station and machinery workshop with waste disposal well), Archerfield (asphalt batching plant TCE/ PCE/ DCE/ VC plume), Townsville (copper refinery discharge and port facility acid sulfur plume), Bardon (former service station, TPH/ BTX plume), Mt White and Cracow (hydrogeological assessment of a gold mine), South Blackwater (impact of acid drainage on groundwater quality), Chinchilla (groundwater monitoring for CSG process water irrigation scheme), Mt Isa (groundwater quality review for Lady Annie copper project)

Projects in South Australia: Kilburn (former galvanizing and metal processing plant)

Landfill monitoring and assessment (groundwater, landfill gas) (25 sites)

- Scenic Rim Regional Council: From 2005 – current: Landfill groundwater, surface water, leachate and landfill gas quarterly monitoring, five closed/ one operational site, Beaudesert, QLD

Projects in NSW: Londonderry, Wetherill Park, Shellharbour (1995-2020), Glenfield, Lithgow, Inverell (2000-current), Walcha, Bega (5 sites), Gregadoo, Forest Hill, Hawkesbury Valley (2015-2020), Milperra

Projects in Victoria: Nunawading, Frankston, Green Gully, Dandenong (2006-2019), Morwell, Dutson Downs, Altona North, Grantville, Rhyll, Wonthaggi

Projects in Queensland: Scenic Rim Regional Council (5 landfills, 2005-current), Logan City Council (6 landfills, 2004-current), City of Gold Coast (7 landfills, 2014-2021), Southport (2017-current)

Mining (>20 sites)

- South32: From 2009 – current: multiple assessments at Yurbi, Townsville and Cannington, including HERA of roadside soil metal levels from Cannington to McKinlay, QLD
- BMA: From 2011 – 2013: Investigation and remediation planning for acid and metalliferous drainage from natural processes and remnant tails at the Red Dams, South Blackwater, QLD

Wetar Island, Indonesia: assessment of gold mine pit and waste dump leakage

Projects in NSW: Ardlethan (environmental compliance, water re-use and tailings deposition strategy, alluvial tin mine), Yerranderie (field investigation, mine adit survey and risk evaluation of former silver mining field), Kandos (groundwater assessment of karst system at a limestone quarry and surrounds), Canbelego (dewatering, water supply and groundwater monitoring at a gold mine),

Cobar (water supply for a silver mine), Helensburgh (hydrogeological and hydrogeochemical assessment of 'deep' groundwater aquifers due to subsidence and dewatering), Toongi (hydrogeological assessment for proposed Dubbo Zirconia Project), Berrima (coal mine seepage)

Projects in Victoria: Yallourn (assessment of chemical impacts on sediment and water in open cut coal mine ponds), Morwell (coal mine overburden dump and surrounds groundwater monitoring)

Projects in Queensland: Einasleigh (characterisation of waste rock samples from Kaiser Bill project), Mt White (hydrogeological assessment of a gold mine), South Blackwater (acid drainage studies), Townsville (assessment and remediation of evaporation pond leakage groundwater impacts), Townsville Port (assessment of soil for Pb/Zn concentrate impacts, and assessment of groundwater for acid sulfur plume), Yurbi (environmental evaluation and risk assessments for soil, surface water and groundwater, concentrate ore rail loading facility), Cannington to McKinlay (health and ecological risk-based assessment, mine site roadside soil), Cracow (hydrogeological and hydrogeochemical review of groundwater data from Gold Mine), Rolleston (waste rock geochemistry for coal expansion)

Projects in Northern Territory: Yuendumu (roadside cyanide spill), Nolan's Bore via Aileron (in pit dewatering requirements for future open cut mine), Macarthur River (independent hydrogeological review Macarthur River Mine), Central Tanami (hydrogeological assessment for gold mine expansion)

Projects in Tasmania: Bell Bay (risk assessment manganese smelter fume and mud), Rosebery (hydrogeological review, proposed rock dump)

Acid sulfate soil assessment and management (>70 sites)

- Auckland Airport: From 2018 – 2020: Technical advice and assessment, including kinetic testing and weathering trials for soil, Auckland Airport expansion Project, Auckland, NZ
- McInnes Wilson Lawyers: From September – December 2018: independent technical advice relating to potential acid sulfate soil leaching at a residential subdivision, Pimpama, QLD

Mukut Palm Oil Plantation, Sumatra, Indonesia: field visits, assessment and assistance with management of issues relating to drainage and palm production

Statewide, Victoria: development with DSE of Best Practice Management Guidelines (BPMG) for the assessment and management of coastal acid sulfate soil (CASS)

Projects in NSW: Port Stephens (catchment-wide), Mascot/ Arncliffe (M5-East, accelerated weathering trials and development of VENM 'B' disposal classification), Banksmeadow (fuel pipeline), Kurnell/ Dunmore (sand mines), Popran Creek, Strathfield (Mason Park Wetlands, including Council training and action plan), Wyong, Kooragang Island, Wollongong (Port Kembla to Bellambi sewer pipeline), Port of Botany Expansion project, Ballina Bypass project, Stockton sand mining expansion, Manly, Taren Point

Projects in Victoria: City Link, Patterson Lakes (Wannakladdin Wetlands), Paynesville (including liming trial), Metung, Lakes Entrance, Nicholson, Port Albert, Docklands (Collins Street extension), Flemington Racecourse, Little River (pipeline), Tooradin, Barwon Heads (Statement of Evidence for VCAT), Kensington, Aberfeldie, Seaford, Maribyrnong, Albert Park, Edithvale, Aspendale (sewer pipeline), Yaringa (marina extension), Koo Wee Rup (road), Edithvale and Bonbeach (LXRA project), King Island (Tas), Seacombe, Wonthaggi

Projects in Queensland: Pinkenba, Bribie Island (x2), Abbot Point, Arundel, Hawthorne, Newstead, Hope Island, Tugun, Carrara, Nudgee, Wynnum-Manly, Pimpama, Coomera, Benowa, Bulimba

Projects in South Australia: Port Adelaide, Lonsdale, Adelaide Desalination Plant

Soil remediation

International: Hull, UK (soil bioremediation at the former gasworks, Clough Road)

Projects in NSW: St Peters (bioremediation and validation of a former bitumen emulsion plant), Coffs Harbour (grease and oil pond bioremediation and validation), Arncliffe (remediation of contamination hotspots on a residential development), Kurnell/ Grafton (bioremediation of creosote impacted soil), South Lismore (arsenic in soil chemical stabilisation and validation)

Projects in Victoria: Dandenong (remediation of the former Dandenong Sewage Treatment Plant), Sunshine West (chemical stabilization study for lead immobilization and on-site re-use), Brighton (assessment, remediation and validation, former service station site)

Projects in Queensland: Rockhampton/ Takura (timber treatment plants, including creosote bioremediation), Kingaroy (demolition/ remediation of a former service station and industrial site), Cannon Hill (assessment, remediation and validation of former fuel depot), Bundaberg (assessment, remediation and validation, former service station)

Projects in South Australia: Whyalla (soil bioremediation treatment, steel mill)

Projects in Tasmania: Bushy Park (investigation and remediation, timber treatment plant)

Gasworks assessment and remediation experience (23 sites)

- Cabonne Council: From 2008 – 2016: investigation, remediation, validation and treatment (bioremediation using Dynamic Biopiles) of the former Molong gasworks, Molong, NSW

Wagga Wagga Tarcutta St NSW – principal hydrogeologist/ risk assessor for assessment

Queenscliff VIC, Katoomba, Yass NSW – principal hydrogeologist for assessments

Portland, Hamilton, Warrnambool VIC, Kingsgrove NSW – project director (PD) for assessments

Colac, Horsham, Stawell, Ararat, Castlemaine VIC – principal hydrogeologist/ risk assessor for detailed hydrogeological and health/ ecological risk assessments post-remediation

Mudgee NSW, West Melbourne VIC, Hull UK – managed bioremediation process, including chemical fingerprinting characterization for gasworks remediation projects

Bathurst, Lithgow NSW, South Melbourne, Fitzroy and Footscray VIC – PD/ principal hydrogeologist for assessments

North Melbourne VIC, Cootamundra and Molong NSW – PD, principal hydrogeologist and risk assessor for assessments and remediation

Publications and Presentations

Stuckey M (2020) *Preparation of a Contaminated Land Investigation Document (CLID)*, ACLCA Queensland – Contaminated Land Technical Practice Guideline TPG 6.

Stuckey M (2019) *Framework for Addressing Environmental Protection (Water) Policy Requirements in CLID Preparation – Guidance for Practitioners*, ACLCA Queensland - Contaminated Land Technical Practice Guideline TPG 2.

Stuckey, M, Carruthers-Taylor, T, Wilson S and Mulvey P (2019) *Dynamic biopiles as a method of enhanced bioremediation of gasworks polycyclic aromatic hydrocarbon impacted soil*. International Cleanup Conference, Adelaide, September 2019.

Stuckey M (2018) *Contaminated Land Certification Practice Guideline – Requirements for Site Owners, Consultants & Auditors*, ACLCA Queensland - Contaminated Land Technical Practice Guideline TPG 1.

Stuckey, M and Mulvey, P (2013) *Looking for fractures – integrating geochemistry with hydrogeology to find inter-aquifer leakage above dewatered or collapsed coal seams*. The Australasian Institute of Mining & Metallurgy (AusIMM), Publication Series No 12/2013, Water in Mining, Nov 2013.

Stuckey, M and Mulvey, P (2012) 'Oxidation without neutralisation can be managed – providing you control the rate.' *Broad-acre agricultural development on acid sulfate soil in south-east Asia (Sumatra, Indonesia)*. Presented at 3rd National Acid Sulfate Soils Conference, Melb, Mar 2012.

Stuckey, M and Spinks, A (2012) *The self-buffering capacity of Coode Island Silt (CIS) excavated from areas near Melbourne CBD and stockpiled for over 11 years*. Presented at the Third National Acid Sulfate Soils Conference, Melbourne, March 2012.



- Stuckey, M and Sheldon, A (2011) *Arsenic bioavailability and health risk in soil – changing land-use from horticultural to residential (NZ case study)*. Presented at EcoForum, Syd.
- Stuckey, M and Boland, L (2011) *A risk-based approach to remediation: lead immobilization through chemical stabilization of waste material*. Presented at EcoForum, Sydney.
- Stuckey, M and Clutterham, M (2011) *Environmental assessment of rural gasworks in NSW*. Presented at EcoForum, Sydney, March 2011.
- Stuckey, M (2010 & 2011) *Acid sulfate soil – case study examples from the consulting industry perspective*. Presented at the Southern Cross Geosciences Professional Short Course in Acid Sulfate Soil, Torquay, VIC, October 2010 & Sydney, NSW, April 2011.
- Adcock, D, Stuckey, M, Mulvey, P, McKay, C and Fitzpatrick, R (2008) *Draft Best practice management guidelines for assessment and management of acid sulfate soils in Victoria*. In: *Draft Strategy for Coastal Acid Sulfate Soils in Victoria*. Department of Sustainability and Environment, Victoria, June 2008.
- Stuckey, M (2007) *Hydrogeological behaviour and hydrochemical evolution as a function of dissolved contaminant transport in a 'blind' buried wedge-shaped paleo-lake aquifer*. Presented at the CRC Care Contamination Cleanup 07 Conference, Adelaide, Jun 2007.
- Mulvey, P, Stuckey, M, Clark, L and Faurie, J (2007) *Risk-based assessment of a former orchard*. Waste Awareness, April-May 2007, pp14-15. WasteMINZ, New Zealand.
- Stuckey, M (2006) *Remediation of a groundwater N-plume utilising enhanced microbial degradation and phyto-remediation processes*. Presented at the Enviro06 Conference, Urban Groundwater Stream, Melbourne, May 2006.
- Mulvey, P and Stuckey, M (2006) *Using source identification and fingerprinting to assess bioavailability changes with time during bioremediation*. Presented at the Bioavailability of Pollutants and Soil Remediation Conference, Seville, Spain, September 2006.
- Stuckey, M (2006) *Remediation of soil and groundwater utilising enhanced microbial degradation processes, Point Nepean Road, McCrae, Victoria*. MSc (Groundwater Hydrology), Flinders University. Awarded High Distinction.
- Stuckey, M (1999) *Organic contamination of "soil in the city"*. Chapter 14 of *Describing, Analysing and Managing Our Soil (DAMOS, First Edition)*, University of Sydney 22-26 November 1999.
- Stuckey, M and Vallely, L (1998) *Organochlorine pesticide concentrations in the surface soil of Western Sydney former market gardens*. National Soils Conference, Brisbane, April 1998.